

COSC 494/557, Data Visualization
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Course Description

Data visualizations provide visual representations of data to help people complete tasks more effectively. With the increasing volume and complexity of data, the ability to flexibly explore data is a critical stage in data science workflows.

The goal of this course is to develop a broad understanding of the principles, methods, and techniques for designing effective data visualizations. The course will span a wide range of topics related to interactive data visualization.

While scientific visualization involves the presentation of data that has some physical or geometric correspondence, information visualization focuses on abstract data without such correspondences such as symbolic, tabular, networked, hierarchical, or textual information sources. We will look at the key elements of both scientific and information visualization over the course of the semester.



The objectives of this course are:

- Learn the key principles of data visualization, including data models, graphical perception, and methods for visual encoding and interaction
- Investigate a variety of techniques and systems in information visualization, including multivariate data, text, and time-oriented data
- Develop skills in building, critiquing, and evaluating visualization techniques
- Build a foundation that will aid the design of new, innovative visualizations
- Apply visualization techniques to real world data analysis scenarios

The course will follow a lecture/seminar style with discussion of assigned readings, as well as viewing of videos and hands-on experience with creating visualization tools.

Course Prerequisites

Students from a variety of disciplines are invited to take the class, but some prior background in math, computer graphics, and graphical user interfaces will be helpful. Some programming experience (preferably Processing/Java or JavaScript) will also be useful.